| **OGGETTI SOTTOPOSTI A VERIFICHE / *ITEMS UNDER TESTS*** | |
|---|---|
| **Descrizione**<br>*Description* | Display used for information system. |
| **Modello base**<br>*Basic Model type* | Compact TFT 32" Outdoor Code 993201900100 |
| **Modello derivato**<br>*Derived Model type* | D_CPTOU3210-LS-P1L3ARIE-H- - 4G1-TTSPFA-Z0<br>D_CPTOU3210-LS-P1L3ARIE-H- - 4G1-TTSPFA-Z1 |
| **Identificativo interno**<br>*Storage No.* | 190883 (sampled by customer) |
| **Richiedente**<br>*Applicant* | Aesys S.p.A. |
| **Indirizzo**<br>*Address* | Via Pastrengo, 7/C<br>I-24068 Seriate (BG) - Italia |
| **Prove effettuate presso**<br>*Test carried out by* | TÜV Rheinland Italia Srl<br>Via E. Mattei, 3 – 20010 Pogliano Milanese (Italy) |
| **Norme di riferimento**<br>*Reference Standards* | **Partial test in according to:**<br>**ETSI EN 300 220-2 V3.2.1 cap.4.2.2** |
| **Scopo delle prove**<br>*Scope of the tests* | To verify the compliance with the following clauses of reference standards<br>• See summary of testing *TEST SUMMARY* section |
| **Risultati di prova**<br>*Test Results* | **COMPLIANT** |

| | | | |
|---|---|---|---|
| **Data ricevimento campioni**<br>*Date of samples receiving* | 30/09/2019 | | |
| **Data inizio prove**<br>*Date of tests start* | 04/10/2019 | **Data fine prove**<br>Date of tests end | 04/10/2019 |
| **Rapporto composto da**<br>*Test report composed by* | 17 Pages | | |

| **Provato da / Tested by**<br>*(name + signature)* | **Approvato da / Approved by**<br>*(name + signature)* |
|---|---|
| Andrea Bortolotti<br>(*Laboratory Technician*) | Roberto Radice<br>(Reviewer) |

The results referred in this report are only relevant to the samples tested and described in this report.
Only complete reproduction of this test report is permitted without written authorisation of TÜV Rheinland Italia.
Compliance with test requirements recorded in this technical report does not give presumption of compliance to all requirements by reference standard.

| RELEASE CONTROL RECORD | | |
|---|---|---|
| TEST REPORT NUMBER | REASON OF CHANGE | DATE OF ISSUE |
| 28118771 008 | Original release | 20/20/2020 |

## OGGETTO SOTTOPOSTO A PROVE / ITEM UNDER TEST

| | |
|---|---|
| **Descrizione** *Description* | Display used for information system |
| **Marca** *Brand* | aesys |
| **Costruttore** *Manufacturer* | Aesys S.p.A. |
| **Modello base** *Basic Model type* | Compact TFT 32" Outdoor Code 993201900100 |
| **Modello derivato** *Derived Model type* | D_CPTOU3210-LS-P1L3ARIE-H- - 4G1-TTSPFA-Z0<br>D_CPTOU3210-LS-P1L3ARIE-H- - 4G1-TTSPFA-Z1 |
| **Dati di targa** *Ratings* | |
| **Classificazione** EUT classification | --- |
| **Massima frequenza di clock** Maximum clock frequency | --- |
| **Installazione** Standing | Wall / Ceiling / Embedded / Pole support |

## Product Description

This display can be part, with any other panels similar or of different types, of a system aimed at informing users in transit on rail vehicles of information to travelers on the railway lines, or general information.

| Mechanical | |
|---|---|
| Size: | TFT 32" |
| Dimensions: | 836 (L) x 530 (H) x 160 (D) mm |
| Estimated Weight | 45Kg |

| | | | |
|---|---|---|---|
| Finish Front : | Aluminum, RAL Range, 50% GLOSS, not reflecting MAT, powder coating | | |
| Finish Rear : | Aluminum, RAL Range, 50% GLOSS, not reflecting MAT, powder coating | | |
| Protection grade: | IP55 | | |
| Front protection: | Antireflective (both side) Laminated Tempered glass with UV and IR protection (compliance to IK08 5J according to the EN62262) | | |
| Lock system: | Hinged door, polyurethane bi-component vulcanized gasket; Special anti-vandal locks | | |
| Interfaces: | 1x Power Supply<br>1x RJ45 Data Line<br>1x M6 Additional ground interface<br>3x SMA connector (for Wireless 2G/3G/4G version, RF antenna & Wifi)<br>1x Audio Output<br>(for further details see the attached mechanical drawing) | | |
| Fixing points: | Monitor : Vesa standard 200x200mm, 4xM8 Female closed holes (for further details see the attached mechanical drawing) | Monitor : Vesa standard 400x400mm, 4xM8 Female closed holes (for further details see the attached mechanical drawing) | Monitor : Vesa standard 400x400mm, 4xM8 Female closed holes (for further details see the attached mechanical drawing) |
| Other: | Mechanical housing compliant to IK10 20J according to the EN62262 | | |

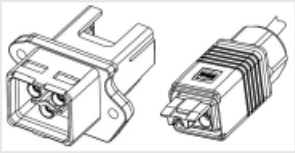
| Electrical | |
|---|---|
| Size | TFT 32" |
| Input power supply voltage: | Nominal 220-240$V_{AC}$ |
| | Range: 198$V_{AC}$ ÷ 264$V_{AC}$ |
| Input power supply frequency range: | 50/60Hz |
| Protections: | Overload, overvoltage, over temperature |
| Power Consumption: | Typ.: 130W (@Brightness 70%) |
| | Max.: 165W (@ Brightness 100%) |
| | Max.: 325W (@ Brightness 100%, Heating ON) |

| Environmental | |
|---|---|
| Operating temperature: | -25° ÷ 50° C when installed with Suncover / Sunshade |
| Thermal management: | At high temperature:<br>- Automatic TFT-LCD matrix brightness linear derating down to maximum 50% with the increase of the environmental temperature<br>- TFT-LCD matrix and PC switched OFF when the highest temperature limit is reached |
| | At low temperature:<br>- display is switched off when the lowest temperature limit is reached |
| Operating humidity: | 10 % ÷ 95 % R.H. without condensation |
| Storage temperature: | -20° ÷ 60° Celsius – Ambient temperature<br>10% ÷ 95% - R.H.<br>at this conditions:<br>- till +40°C @90% R.H.<br>- till +50°C @60% R.H.<br>- till +60°C @40% R.H. |
| Cooling system: | Direct air exchange with the outside by special filter |
| Heating system: | Installed |
| Temperature Sensor | Installed |
| Light Sensor | Installed |
| Acceleration Sensor | *Upon request* |

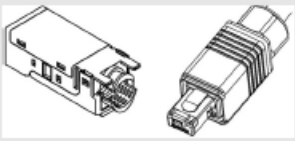
| Data Communication | |
|---|---|
| Type of communication: | Copper LAN Ethernet 10/100/1000 Base TX |
| Protocol type: | Different protocol types supported (according to the software player hosted), SNMP protocol for diagnostic data |
| Other: | *Upon request:*<br>*- Built-in LAN Ethernet 10/100/1000Base TX to 10/100/1000Base FX Media converter (multimode)*<br>*- Wireless 2G/3G/4G*<br>*- Wi.fi*<br>*(for further details refer to the commercial offer)* |
| **Connectors** | |
| Power supply: | 1x Harting PushPull Power 2/0, panel feed-through and connector, 3-poles (2+PE) |
| Data line: | 1x Harting PushPull RJ45 Technology, RJ45-panel jack feed-through |
| Audio output: | 1x Cable Gland |
| Antenna: | 3x SMA Connector |
| Ground interface: | 1x M6 male ground point |

| Optical specifications (matrix module) | |
|---|---|
| Size: | TFT 32" |
| Format: | 16:9 |
| Type: | Normally black |
| (*) Active area: | 698.4 (H) x 392.85 (V) mm |
| (*) Pixel pitch: | 0.36375 x 0.36375 mm x RGB |
| Pixel format: | 1920 (H) x 1080 (V) ( Native resolution ) |
| Colour depth: | 16.7M colors |
| Luminance:(on white colour) | 1.000 cd/m$^2$ (typ.) @ Center point |
| Contrast ratio: | 4000 : 1 typ. (with dimming) |
| Viewing angle (CR > 10): | R/L 178° (typ.) – U/D 178° (typ.) |
| Response time: | 8ms (Typ., Grey-to-Grey) |
| Backlight Technology: | LED |

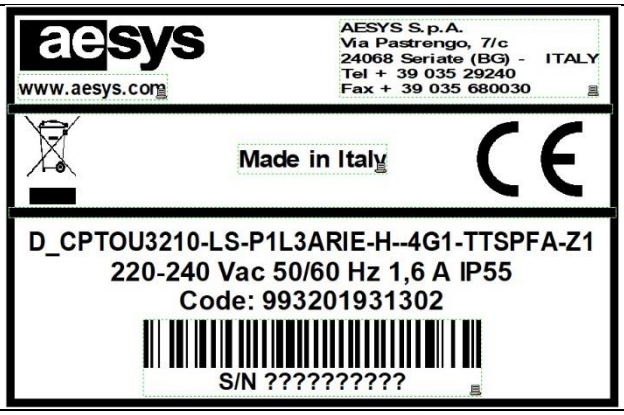
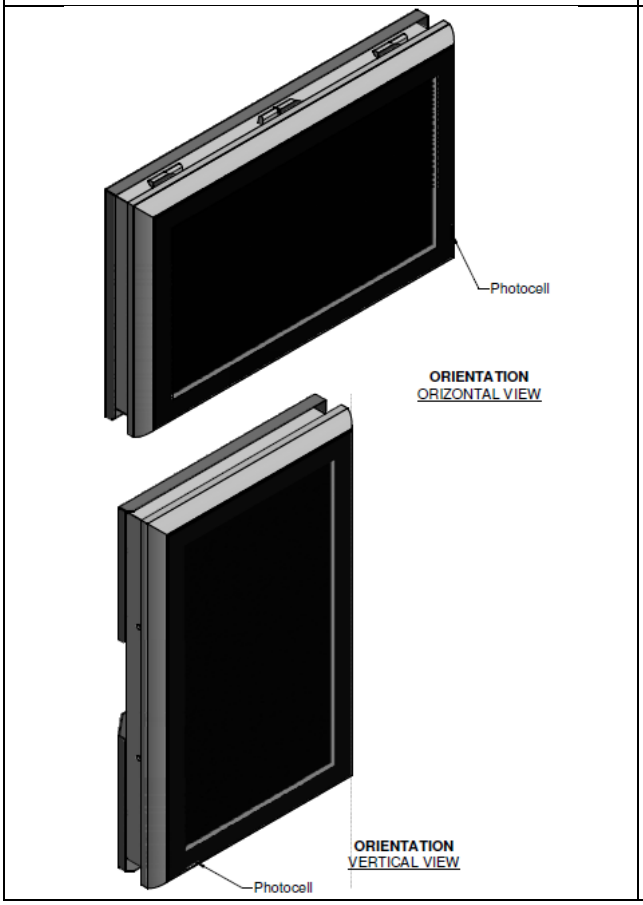
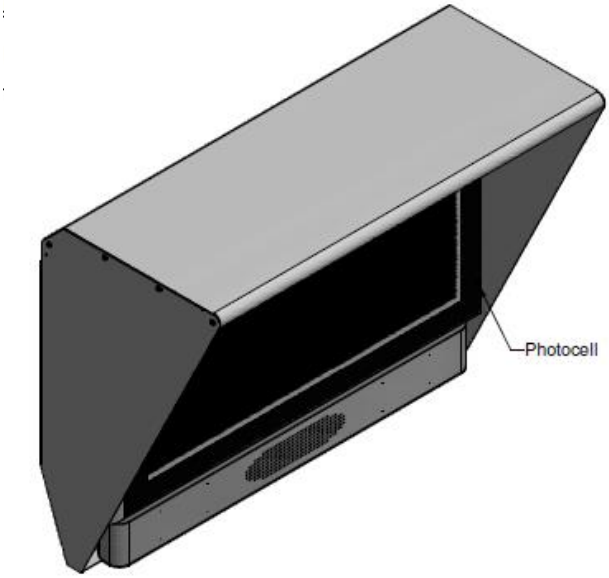
## Power Supply

| Connector Type | Pin # | Signal | Description |
|---|---|---|---|
|  Harting Push pull V4 Power plug | 1 | L | Line 230Vac power input |
| | 2 | N | Neutral 230Vac power input |
| | 3 | GND | Ground |

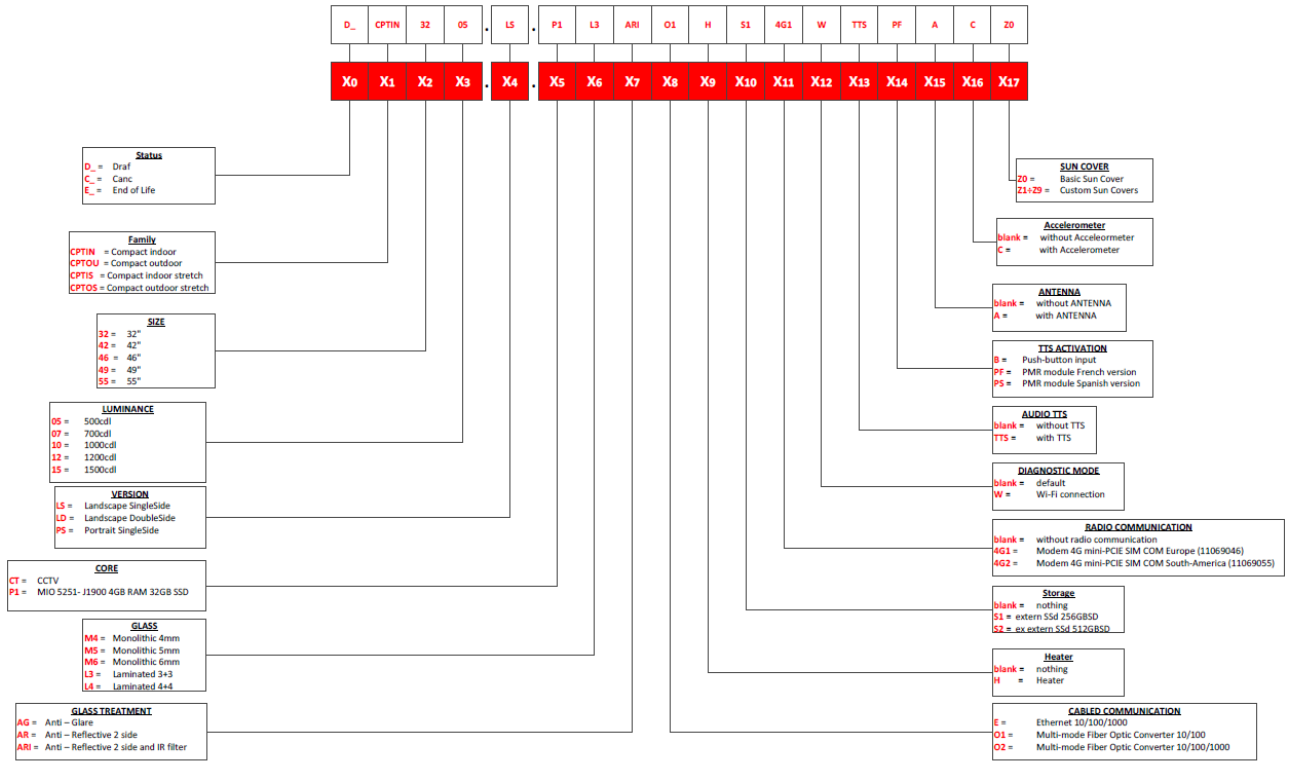
## Ethernet data line

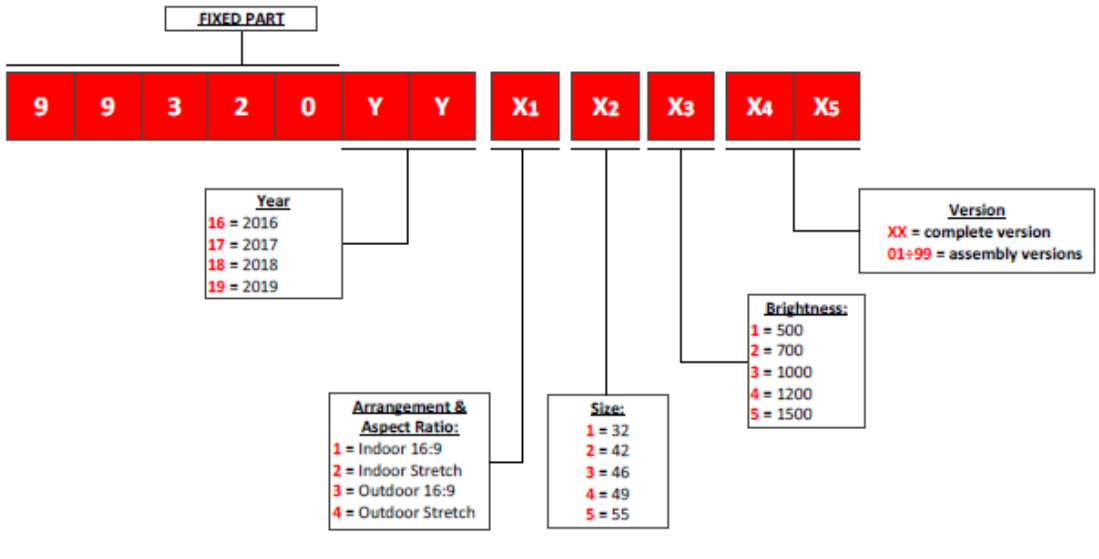
| Connector Type | Pin # | Signal | Description |
|---|---|---|---|
|  Harting Push pull V4 RJ45 | 1 | TX+ | Transmit Data + |
| | 2 | TX- | Transmit Data - |
| | 3 | RX+ | Receive Data + |
| | 4 | BI_DC+ (GHz) | DC+ for GBe |
| | 5 | BI_DC- (GHz) | DC- for GBe |
| | 6 | RX- | Receive Data - |
| | 7 | BI_DD+ (GHz) | DD+ for GBe |
| | 8 | BI_DD- (GHz) | DD- for GBe |

## Derived model(s)

| D_CPTOU3210-LS-P1L3ARIE-H- - 4G1-TTSPFA-Z0 | D_CPTOU3210-LS-P1L3ARIE-H- - 4G1-TTSPFA-Z1 |
|---|---|
| |  |
| Commercial name | Sun cover |
|  |  |

## Speaking code


D_ CPTIN 32 05 . LS . P1 L3 ARI O1 H S1 4G1 W TTS PF A C Z0
X0 X1 X2 X3 . X4 . X5 X6 X7 X8 X9 X10 X11 X12 X13 X14 X15 X16 X17
Status
D_ = Draf
C_ = Canc
E_ = End of Life
Family
CPTIN = Compact indoor
CPTOU = Compact outdoor
CPTIS = Compact indoor stretch
CPTOS = Compact outdoor stretch
SIZE
32 = 32"
42 = 42"
46 = 46"
49 = 49"
55 = 55"
LUMINANCE
05 = 500cdl
07 = 700cdl
10 = 1000cdl
12 = 1200cdl
15 = 1500cdl
VERSION
LS = Landscape SingleSide
LD = Landscape DoubleSide
PS = Portrait SingleSide
CORE
CT = CCTV
P1 = MIO 5251- J1900 4GB RAM 32GB SSD
GLASS
M4 = Monolithic 4mm
M5 = Monolithic 5mm
M6 = Monolithic 6mm
L3 = Laminated 3+3
L4 = Laminated 4+4
GLASS TREATMENT
AG = Anti – Glare
AR = Anti – Reflective 2 side
ARI = Anti – Reflective 2 side and IR filter
SUN COVER
Z0 = Basic Sun Cover
Z1÷Z9 = Custom Sun Covers
Accelerometer
blank = without Acceleormeter
C = with Accelerometer
ANTENNA
blank = without ANTENNA
A = with ANTENNA
TTS ACTIVATION
B = Push-button input
PF = PMR module French version
PS = PMR module Spanish version
AUDIO TTS
blank = without TTS
TTS = with TTS
DIAGNOSTIC MODE
blank = default
W = Wi-Fi connection
RADIO COMMUNICATION
blank = without radio communication
4G1 = Modem 4G mini-PCIE SIM COM Europe (11069046)
4G2 = Modem 4G mini-PCIE SIM COM South-America (11069055)
Storage
blank = nothing
S1 = extern SSd 256GBSD
S2 = ex extern SSd 512GBSD
Heater
blank = nothing
H = Heater
CABLED COMMUNICATION
E = Ethernet 10/100/1000
O1 = Multi-mode Fiber Optic Converter 10/100
O2 = Multi-mode Fiber Optic Converter 10/100/1000

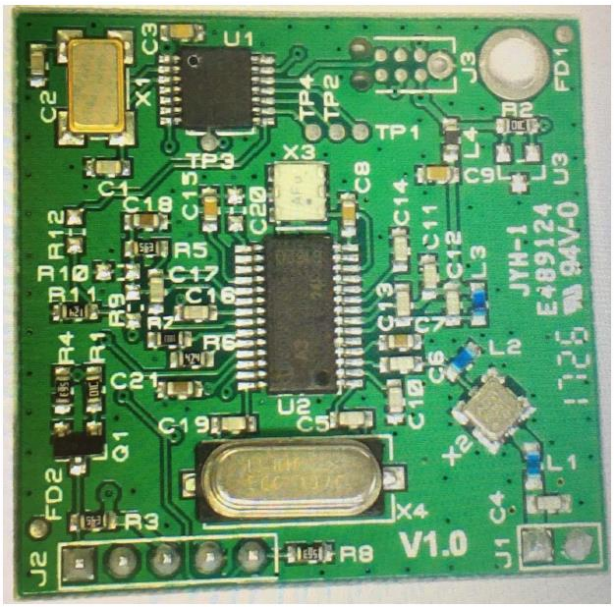


| **INTERFACE PORTS** | | | | |
|---|---|---|---|---|
| **Port** | **Description** | **Connection** | **Shielded** | **Cable length** |
| Enclosure | Conductive surface | Closed by screws | --- | --- |
| AC Power Port | Main Input | 220-240V 50/60Hz 1,8A | No | --- |
| DC Power Port | Port not present | | | |
| Analogue/digital data ports | --- | Port not present | No | <3m. |
| Wired Network port | Ethernet data line | RJ45 connector | Yes | >3mt |
| *Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical<br>I/O = Signal Input or Output Port (Not Involved in Process Control)<br>TP = Telecommunication Ports | | | | |

| **OPERATING MODES** | |
|---|---|
| #1 | Equipment supplied at 230Vac 50Hz<br>The EUT RX module is continuously receiving mode |

## RADIO MODULE - - TECHNICAL DATA DECLARED BY THE MANUFACTURER

ASK Radio Receiver - NF S32-002



**Power supply**
Module must be powered with +5VDC +/-10%.
An input low pass filter with R = 10 Ohms and C = 1µF can be used to reduce module power supply ripple.

**Power consumption**
Active power consumption is typically 6mA at 5V / +25°C, and maximum 8mA over full temperature range.
Power down power consumption if typically 1mA @25°C, and maximum 1.5mA over full temperature range.

**Temperature**
Module can be used under industrial -40°C / +85°C range.

**Signals**
ENABLE input must be tied high to set module in active mode. An internal 47 KOhms pull-down resistor is used on this input. Input voltage on this pin must be under 0.7V to ensure power-down, above 3.5V to ensure powerup, and must not exceed VCC+0.2V.
TRIG_OUT output goes low for 750ms when a valid radio signal is received. Most remote controls tested send multiple frames to ensure transmission, so output active time duration can be increased by the length of frames received. The TRIG_OUT stage consists in a small bipolar transistor coupled with a 47 KOhms pull-up resistor to VCC.
If application requires an open collector output without pull-up to VCC, the R3 resistor can be unsoldered (placed close to the TRIG_OUT pin). In this case Vceo max voltage must not exceed 40V and current drawn must be lower than 50mA. Take care avoiding noisy signals (switching power supplies, high speed logic, radio transmitters) running close to the receiver.

**Radio characteristics**
ASK receiver
Module is compliant with NF S32-002 specifications. Nominal center frequency : 868.3 MHz.

**Frame decoding**
Module frame decoding is ensured by a microcontroller clocked by a crystal. Module tolerates transmitter framing clock deviation over +/-5% range (most remote controls use an unprecise clock). Noise rejection is ensure by an algorithm that validates signal after decoding a minimum number of contiguous frame repetitions.

| Reference Document | Title of Document |
|---|---|
| ETSI EN 300 220-1 V3.1.1 | Short Range Devices (SRD) operating in the frequency range 25 MHz to 1000 MHz;<br>Part 1: Technical characteristics and methods of measurement |
| ETSI EN 300 220-2 V3.2.1 | Short Range Devices (SRD) operating in the frequency range 25 MHz to 1000 MHz;<br>Part 2: Harmonised Standard for access to radio spectrum for non specific radio equipment |

**TESTS SUMMARY**

**UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN ..... 13**

**SOMMARIO DELLE PROVE / *TESTS SUMMARY***

| Description | Result | Notes |
|---|---|---|
| Unwanted emissions in the spurious domain | PASS | --- |

**Legend:** Pass = Result within the limits N/A = Not Applicable N/R = Not requested by the Client

**DECISION RULE**

Statements of conformity (PASS or FAIL) to specifications are made in this report without taking measurement uncertainty into account.

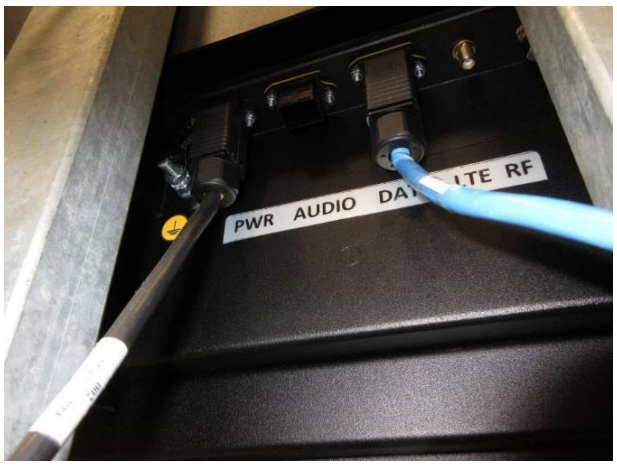
Where statements of conformity are made in this report, the following decision rules are applied:
PASS – Results within limits/specifications

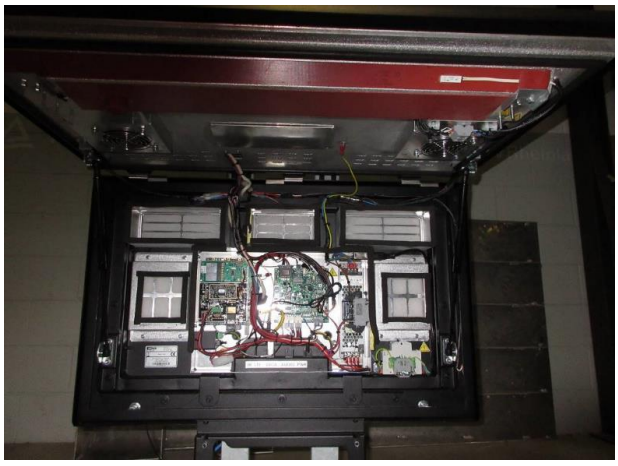
FAIL – Results exceed limits/specifications

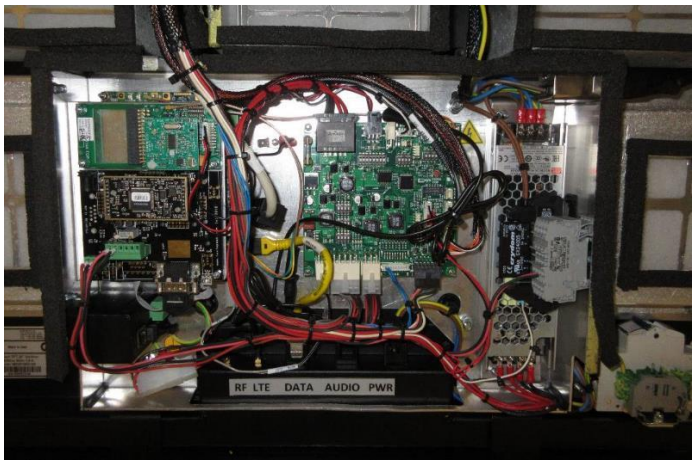
(emission test according to CISPR 16-4-2 cl.4.2, immunity tests TRI applies the disturbance level indicated in the product standard)

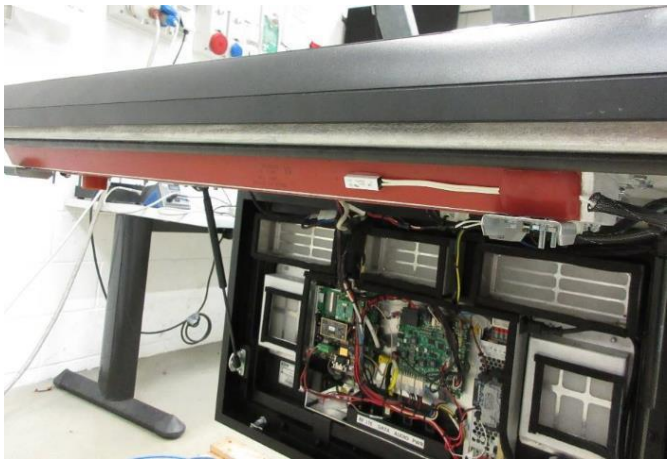
Compliance with performed tests and recorded in this technical report does not give presumption of compliance to all requirements of the reference standard

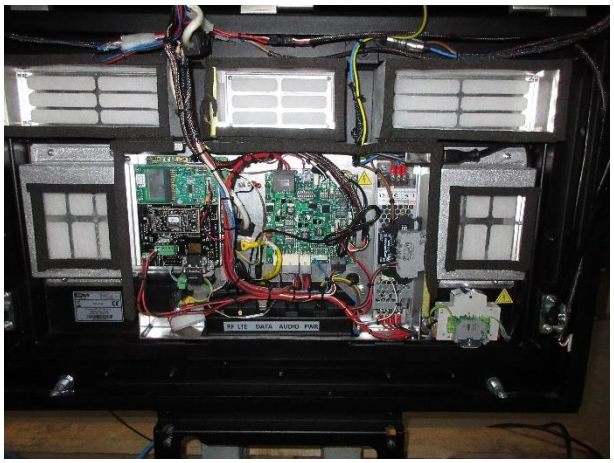
**PHOTOGRAPHIC DOCUMENTATION**

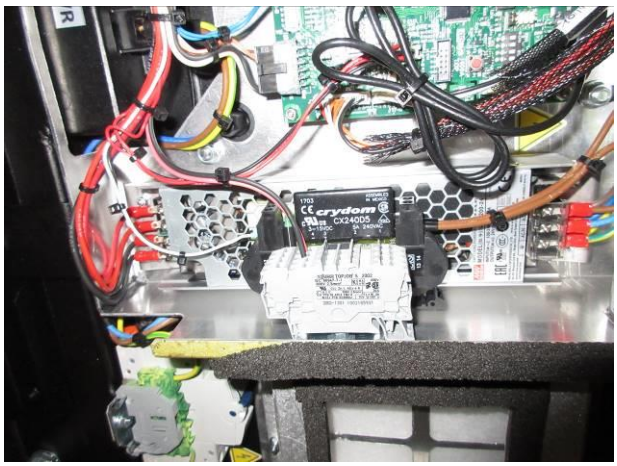

PWR AUDIO

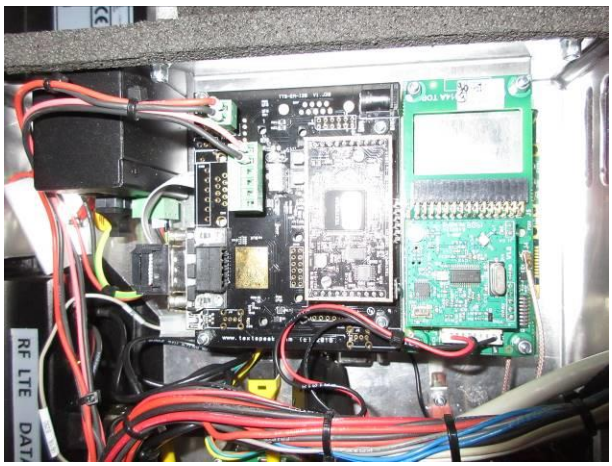



RF LTE DATA AUDIO PWR

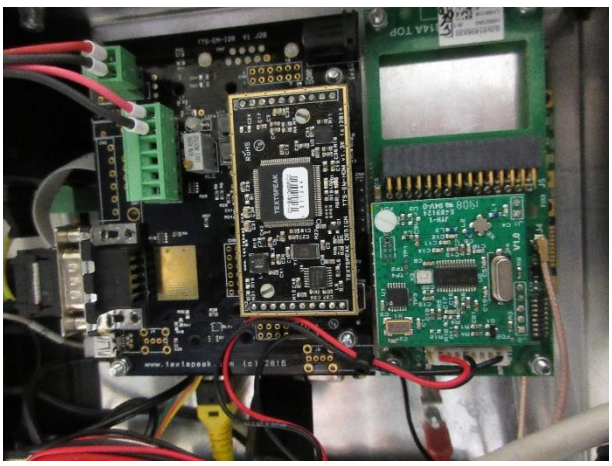





crydom
CX2405


RF LTE DATA

UI2 UCHIYA 3
110C 164



| ***Test N.1*** | **UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN** |
|---|---|

| | |
|---|---|
| **Reference standard** | ETSI EN 300 220-2 V3.2.1 |
| **List of reference equipment** | ➢ Spectrum analyzer R&S mod. ESW44 (Inv. 87020967)<br>➢ Semi-anecoic chamber ETS Lindgren mod. FAC3 (Inv. 87020484)<br>➢ Biconilog Antenna ETS Lindgren mod. 3142E (Inv. 87020457)<br>➢ Antenna Horn with preamplifier ETS-Lindgren mod. 3117-PA (Inv. 2782348) |
| **Measurement Uncertainty** | (0 – 3,6) GHz: 2,7 dB; Coverage factor: 2,3<br>(3,6 – 8) GHz: 3,1 dB; Coverage factor: 2,2<br>(8 – 40) GHz: 3,7 dB; Coverage factor: 2,0<br>Coverage probability: 95 % |

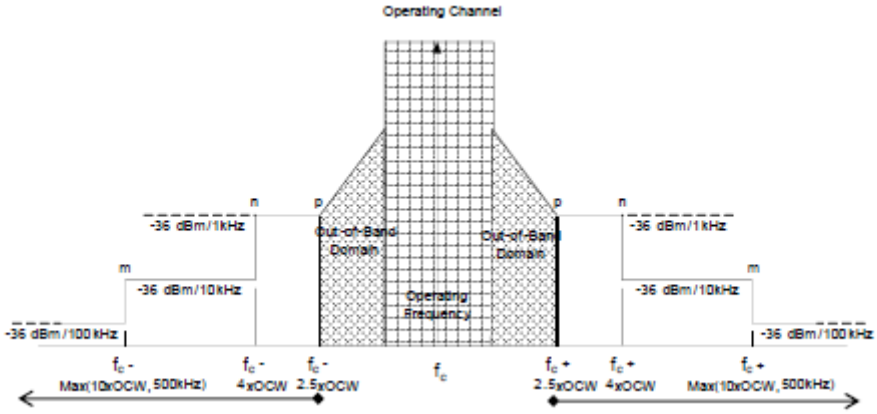
| | |
|---|---|
| **Number of samples under test** | 1 |

| **Test Conditions** | **Temperature** | **Relative Humidity** |
|---|---|---|
| **Normal Temperature** | 15 to 35 °C | 20% to 75% |
| **Test Conditions** | **Parameter** | **Measured** |
| **Test source voltages** | Mains supply | 230Vac |

| | |
|---|---|
| **Test Procedure** | ETSI EN 300 220-1 V3.1.1 par. 5.9.1 |

### 5.9.1 Description

#### 5.9.1.1 Unwanted emissions for a TX mode




Spurious emissions are unwanted emissions in the spurious domain at frequencies other than those of the Operating Channel and its Out Of Band Domain. The relevant spurious domain is shown in Figure 7.

#### 5.9.1.2 Unwanted emissions for all other modes

Spurious radiations from the EUT are components, at any frequency, radiated by the equipment and antenna.

| | |
|---|---|
| **EUT Operating Mode(s)** | #1,#2 |
| **Acceptance Criteria** | ETSI EN 300 220-1 V3.1.1 par. 5.9.2 |

The power of any unwanted emission in the spurious domain shall not exceed the values given in Table 19.

**Table 19: Spurious domain emission limits**

| Frequency / State | 47 MHz to 74 MHz<br>87,5 MHz to 118 MHz<br>174 MHz to 230 MHz<br>470 MHz to 790 MHz | Other frequencies below 1 000 MHz | Frequencies above 1 000 MHz |
|---|---|---|---|
| **TX mode** | -54 dBm | -36 dBm | -30 dBm |
| **RX and all other modes** | -57 dBm | -57 dBm | -47 dBm |

### 5.9.3.1 Test conditions for TX mode

The EUT shall be operated in a mode representative of normal operation.

For EUT without an external conventional 50 Ω coaxial antenna connector, the spurious emissions levels shall be established by the radiated measurement procedure in clause 5.9.3.3.2.

For all other EUT the spurious emissions levels shall be established as both:

• the conducted measurement procedure in clause 5.9.3.3.1; and

• the radiated measurement procedure in clause 5.9.3.3.2, with the antenna port terminated in a dummy load.

1) The transmitter shall be performed on the lowest and the highest Operating Frequency declared by the manufacturer. Additional frequencies may be tested.

2) The measurement shall be performed with the EUT operating at its maximum operating power level, as declared by the manufacturer, and also with the EUT in powered-on stand-by mode.

3) The RBW of measuring receiver are shown in Table 20.

**Table 20: Parameters for TX Spurious Radiations Measurement**

| Operating Mode | Frequency Range | $RBW_{REF}$ (see note 2) |
|---|---|---|
| Transmit mode | 9 kHz ≤ f < 150 kHz | 1 kHz |
| | 150 kHz ≤ f < 30 MHz | 10 kHz |
| | 30 MHz ≤ f < $f_c$ - m | 100 kHz |
| | $f_c$ - m ≤ f < $f_c$ - n | 10 kHz |
| | $f_c$ - n ≤ f < $f_c$ - p | 1 kHz |
| | $f_c$ + p < f ≤ $f_c$ + n | 1 kHz |
| | $f_c$ + n < f ≤ $f_c$ + m | 10 kHz |
| | $f_c$ + m < f ≤ 1 GHz | 100 kHz |
| | 1 GHz < f ≤ 6 GHz | 1 MHz |

NOTE 1: f is the measurement frequency.
$f_c$ is the Operating Frequency.
m is 10 x OCW or 500 kHz, whichever is the greater.
n is 4 x OCW or 100 kHz, whichever is the greater.
p is 2,5 x OCW.

NOTE 2: If the value of RBW used for measurement is different from $RBW_{REF}$, use bandwidth correction from clause 4.3.10.1.

### 5.9.3.2 Test conditions for RX and all other modes

The EUT shall be operated in a mode representative of normal operation.

For EUT without an external conventional 50 Ω coaxial antenna connector, the spurious emissions levels shall be established by the radiated measurement procedure in clause 5.9.3.3.2.

For all other EUT the spurious emissions levels shall be established as both:

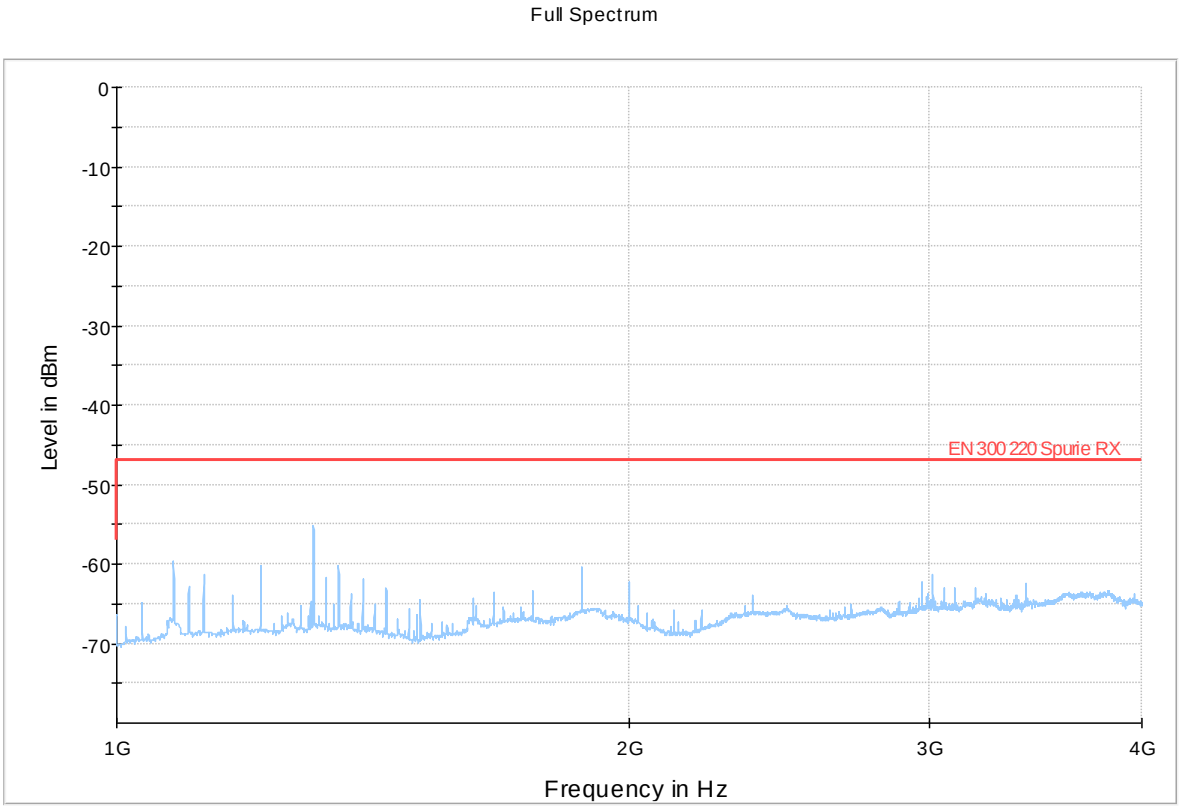
• the conducted measurement procedure in clause 5.9.3.3.1; and

• the radiated measurement procedure in clause 5.9.3.3.2, with the antenna port terminated in a dummy load.

| **Normal test conditions** | | | | | | |
|---|---|---|---|---|---|---|
| **RX mode** | | | **Test temperature: 24°C** | | **Voltage: 230V~ 50Hz** | |
| **Frequency range (MHz)** | | | **Filter bandwidth (KHz)** | | | |
| 25-30 | | | 10 | | | |
| 30-1000 | | | 100 | | | |
| **Frequency (MHz)** | **MaxPeak (dBm)** | **Height (cm)** | **Azimuth (deg)** | **Polarization** | **Limit (dBm)** | **Margin (dB)** |
| --- | See note 1 | --- | --- | --- | -57 | --- |
| **Frequency range (MHz)** | | | **Filter bandwidth (KHz)** | | | |
| 1000-6000 | | | 1000 | | | |
| **Frequency (MHz)** | **MaxPeak (dBm)** | **Height (cm)** | **Azimuth (deg)** | **Polarization** | **Limit (dBm)** | **Margin (dB)** |
| --- | See graph | --- | --- | --- | -47 | --- |

Note 1: No spurious are detected over host equipment noise level

| Frequency range (MHz) | Filter bandwidth (KHz) |
|---|---|
| 1000-6000 | 1000 |




**END OF TEST REPORT**